

RSPT 61B: NEONATAL RESPIRATORY CARE

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2022
Units:	3
Hours:	2 lecture, 3 laboratory per week (60 total per quarter)
Prerequisite:	RSPT 61A.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Student Learning Outcomes

- Can demonstrate the appropriate steps and sequence for the resuscitation of a neonate.
- Explain the steps necessary to place a newborn on an infant ventilator and applies the principles of airway management appropriately.

Description

In depth look at neonatal respiratory care. Examination and assessment of the neonate. Neonatal respiratory diseases and disorders including treatment and management. Preparation for the Neonatal Resuscitation Program certification. Intended for students in the Respiratory Therapy Program; enrollment is limited to students accepted in the program.

Course Objectives

The student will be able to:

1. Explain the stages of fetal development and the gestational age at which they occur
2. Identify several conditions that lead to abnormal development and lung injury
3. Describe fetal circulation and shunts and the sequence of events that occur when the fetus transitions to extrauterine life
4. Explain antenatal assessment and high risk delivery
5. Demonstrate neonatal assessment and resuscitation
6. Perform an examination and assessment of the neonatal patient
7. Analyze radiographic studies of the neonate
8. Interpret laboratory data
9. Recognize monitoring equipment and relate the data to the patient's condition
10. Describe oxygen equipment
11. Explain the use and indications for surfactant replacement therapy
12. Perform airway clearance techniques
13. Apply the principles of airway management to the neonatal patient
14. Explain indications and use of mechanical ventilation of the neonate
15. Explain indications and use of non-invasive ventilation of the neonate
16. Describe neonatal pulmonary disorders

17. Explain neonatal complications of respiratory care
18. Identify congenital cardiac defects
19. Describe Sudden Infant Death Syndrome
20. Explain indications for extracorporeal life support

Course Content

1. Fetal development
 - a. Stages
 - i. Embryonal
 - ii. Pseudoglandular
 - iii. Canalicular
 - iv. Saccular
 - v. Alveolar
2. Abnormal development and lung injury
 - a. Pulmonary hypoplasia
 - b. Respiratory Distress Syndrome (RDS)
 - c. Lung prematurity
3. Fetal circulation
 - a. Stages of heart development
 - b. Fetal shunts
 - i. Ductus venosus
 - ii. Foramen ovale
 - iii. Ductus arteriosus
 - c. Fetal directional blood flow
 - d. Transition after birth
4. Antenatal assessment and high risk delivery
 - a. Antenatal assessment
 - i. History
 - b. High risk
 - i. Cervical insufficiency
 - ii. Alcohol use
 - iii. Smoking
 - iv. Drug use
 - v. Hypertension
 - vi. Diabetes mellitus
 - vii. Nulliparity
 - viii. Advanced maternal age
 - ix. Multiples
5. Neonatal assessment and resuscitation
 - a. Neonatal Resuscitation Program review
 - b. Resuscitation simulations
6. Examination and assessment of the neonatal patient
 - a. Apgar score
 - b. Physical examination
 - c. Vital signs
 - d. Silverman score
 - e. Respiratory assessment
7. Radiographic studies of the neonate
 - a. Chest radiographs
 - b. CT scans
8. Laboratory data
 - a. ABGs
 - b. Chemistry
 - c. Hematology

- d. Coagulation studies
 - e. Electrolytes
9. Monitoring
 - a. Cardiac monitoring
 - i. Arterial lines
 - ii. UV catheter
 - b. Non-invasive monitoring
 - i. Transcutaneous
 - ii. Oximetry
 - iii. End tidal CO₂
 10. Oxygen equipment
 - a. Fixed performance
 - b. Variable performance
 11. Surfactant replacement therapy
 - a. Physiology
 - b. Indications
 - c. Prophylactic vs. rescue therapy
 12. Airway clearance techniques
 - a. Suctioning
 - b. Bronchopulmonary hygiene therapy
 13. Airway management to the neonatal patient
 - a. Indications for intubation
 - b. Indications for nasal CPAP
 14. Mechanical ventilation of the neonate
 - a. Indication
 - b. Initial ventilator settings
 - c. Modes of ventilation
 - i. Pressure modes
 - ii. Volume modes
 - iii. Combination modes
 - d. Weaning from mechanical ventilation
 - e. Alarm settings
 - f. Troubleshooting
 - g. Complications
 15. Non-invasive ventilation of the neonate
 - a. Indications
 - b. Equipment
 - c. Interface
 - d. Complications
 16. Neonatal pulmonary disorders
 - a. Respiratory Distress Syndrome
 - b. Pneumonia
 - c. Meconium aspiration syndrome
 - d. Tracheoesophageal fistula
 - e. Congenital abnormalities
 - f. Pleural effusion
 - g. Pulmonary edema
 - h. Cysts and tumors
 - i. Malacia-Atresia
 - j. Transient tachypnea of the newborn
 - k. Cardiovascular disorders
 17. Neonatal complications of respiratory care
 - a. Chronic lung disease
 - b. Wilson-Mikity syndrome
 - c. Pulmonary insufficiency
 - d. Bronchopulmonary dysplasia
 18. Congenital cardiac defects
 - a. Patent ductus arteriosus
 - b. Atrial septal defect
 - c. Ventricular septal defect
 - d. Atrioventricular canal defect
 - e. Aortic stenosis
 - f. Coarctation of the aorta
 - g. Hypoplastic left heart syndrome
 - h. Total anomalous pulmonary venous return
 - i. Tetralogy of Fallot
 - j. Truncus arteriosus
 - k. Complete transposition of the great vessels
 - l. Hypoplastic right ventricle
 19. Sudden Infant Death Syndrome
 - a. Incidence
 - b. Apparent life threatening events
 - c. Apnea
 20. ECMO
 - a. Indications
 - b. Risks and complications

Lab Content

1. Interpret infant CXRs
 - a. Radiographic studies of the neonate
 - b. Chest radiographs
 - c. CT scans
2. Interpret clinical lab values for neonatal patients
 - a. ABGs
 - b. Chemistry
 - c. Hematology
 - d. Coagulation studies
 - e. Electrolytes
3. Assemble, troubleshoot and manage infant ventilators
 - a. Indication
 - b. Initial ventilator settings
 - c. Modes of ventilation
 - i. Pressure modes
 - ii. Volume modes
 - iii. Combination modes
 - d. Weaning from mechanical ventilation
 - e. Alarm settings
 - f. Troubleshooting
 - g. Complications
4. Perform a neonatal ventilator check
5. Demonstrate how to assemble a bag/mask unit and bag a simulation baby with given parameters
6. Performs neonatal resuscitation simulation
7. Complete the Neonatal Resuscitation Program (NRP) certification
8. Neonatal assessment and resuscitation
 - a. Neonatal Resuscitation Program review
 - i. Apgar score
 - ii. Physical examination

- iii. Vital signs
 - iv. Silverman score
 - v. Respiratory assessment
 - vi. Resuscitation simulations
9. Monitoring
 - a. Cardiac monitoring
 - i. Arterial lines
 - ii. UV catheter
 - b. Non-invasive monitoring
 - i. Transcutaneous
 - ii. Oximetry
 - iii. End tidal CO₂
 10. Oxygen equipment
 - a. Fixed performance
 - b. Variable performance
 11. Surfactant replacement therapy
 - a. Physiology and indications
 - b. Delivery of surfactant
 - c. Prophylactic vs. rescue therapy
 12. Airway clearance techniques
 - a. Suctioning
 - b. Bronchopulmonary hygiene therapy
 13. Airway management to the neonatal patient
 - a. Indications for intubation
 - b. Indications for nasal CPAP
 14. High frequency oscillatory ventilation (HFOV)
 - a. Indication
 - b. Initiation
 - c. Weaning
 - d. Alarm settings
 - e. Troubleshooting
 - f. Complications
 15. Non-invasive ventilation of the neonate
 - a. Indications
 - b. Equipment
 - c. Interface
 - d. Complications

Special Facilities and/or Equipment

1. Calculator, infant ventilators, airway care equipment, and resuscitation infant mannequins.
2. When taught online, students must have access to a computer with internet access.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Midterm examinations
 Special assignment
 Lab ventilator check off
 Laboratory assignments
 Comprehensive examination

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture

Discussion on neonatal topics such as fetal development and birth

Representative Text(s) and Other Materials

Walsh, Brian K.. Neonatal and Pediatric Respiratory Care, 5th ed.. 2019.

Kacmarek, Stoller, and Heuer. Egan's Fundamentals of Respiratory Care, 12th ed.. 2019.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

Reading assignments will correspond to material covered and may vary from 2-5 chapters per week

Discipline(s)

Respiratory Technologies